

III. Traffic Circulation Element

Introduction

The purpose of the Traffic Circulation Element is to establish travel desires and a projected transportation system in the jurisdiction and particularly to plan for future motorized and non-motorized traffic circulation systems.

Transportation serves people that are engaged in a variety of activities; working, playing, shopping, living, etc. It is no surprise therefore that we find transportation routes connecting the land uses which generate such activities. This movement by people and goods between places of activity, is caused by a transportation-land use relationship.

Traffic circulation plans must be based on a future land use concept for the City and should enable achievement of attractive neighborhoods; meet service needs of businesses; provide access to schools, parks, and community facilities; and accommodate traffic which passes through the City but which does not serve the City's residents or contribute to its economy.

If the needs of the motorized traffic are not met, unsafe and detrimental economic and environmental factors will exist. However, thoroughfares should not be extended or widened based solely on traffic volumes. The effects of roadway improvements and projected traffic impacts must be considered in light of environmental and economic conditions.

The plan elements should also consider non-motorized transportation (bicycle and pedestrian). These modes of transportation have their own special needs. They also provide an alternative to the automobile.

Existing Traffic Circulation Data

An inventory of the existing transportation network within the City of Clewiston was undertaken to determine the type of transportation systems available, functional classification of roadways, number of through lanes, corresponding capacities and daily volumes. Figure III-1 illustrates the inventoried items. Each of the items are discussed in the following section.

Functional Classification

Roadways are classified according to their purpose in the network, speed of travel on the roadway and other characteristics. The following definitions, which are based on Chapter 9J-5, Florida Administrative Code, describe the "functional" terminology of streets and highways used throughout the remainder of this section.

Principal Arterial Road

A roadway whose primary purpose is carrying through traffic. Principal arterials provide service that is relatively continuous, high in volume, of long trip length, and high operating speed.

Minor Arterial Road

A roadway similar to a principal arterial, but providing greater land access and distributing traffic to smaller geographic areas than the major arterials. Minor arterials also offer lower traffic mobility.

Collector Streets

A roadway providing both land access and traffic circulation between local roads and/or arterial roads. A collector provides service that is relatively moderate in volume, trip length and speed.

Local Streets

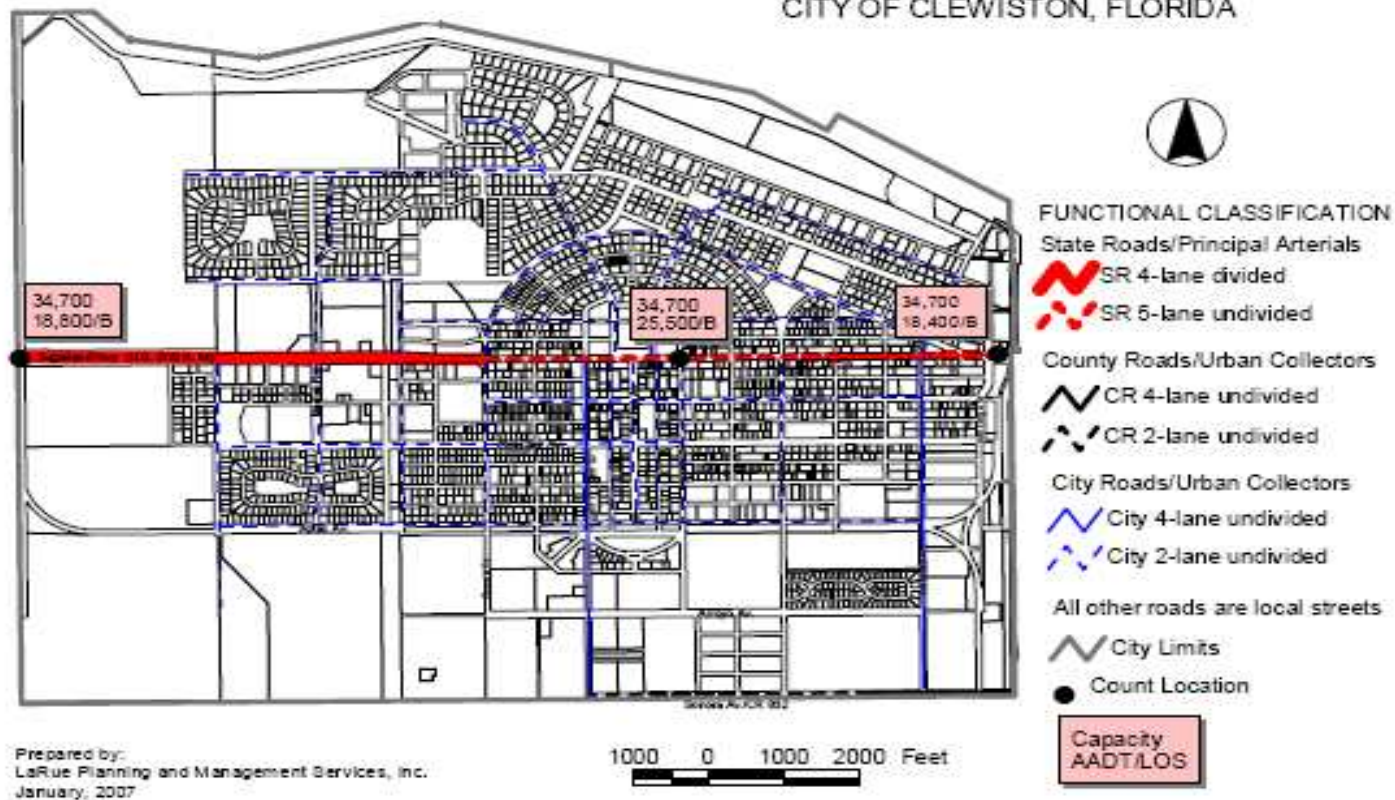
A roadway whose primary purpose is providing direct access to abutting property and connections to a higher order roadway. A local street provides service that is relatively low in volume and short average trip length or minimal through traffic movements.

The functional classification for the State roadways within the City of Clewiston as illustrated in Figure III-1 was obtained from the Florida Department of Transportation (FDOT). The number of miles by type of facilities by classification are shown on Table III.1.

Table III.1		
Functional Classification Inventory		
Clewiston, Florida 1989		
Jurisdiction	Type	Mileage
State Highway System	Principal Arterial	3.6 miles
	Minor Arterial	
Hendry County System	Minor Arterial	2.4 miles
	Urban Collectors	
City Street System	Urban Collectors	63.5 miles
	Local Streets	
Total		70.5 miles

Source: Gee & Jenson Engineers – Architects - Planners, Inc.

Figure III-1
EXISTING TRAFFIC CIRCULATION CONDITIONS
CITY OF CLEWISTON, FLORIDA



There are approximately 70 miles of roadways currently in the City of Clewiston. Of these, nearly 90% are local streets. Less than 10% of the roadway system is made up of S.R. 80/U.S. 27 (3.6 miles) and C.R. 832 (2.4 miles).

The main east-west roadway, U.S. 27, is the primary access way between the west and east coasts of Florida connecting the Fort Myers and West Palm Beach areas. U.S. 27 joins S.R. 80 just west of Clewiston and both route designations continue eastward through the City. U.S. 27 connects the Orlando/Central Florida area to the Miami area. It is the only north-south roadway in the entire Central Florida area west of Okeechobee. There are very few county roads in Hendry County. U.S. 27 through Clewiston is part of the primary roadway serving the northern and eastern sections of the county.

Traffic Volumes

The 2005 average daily traffic volumes for U.S. 27 are shown in Table III.2a. The historic traffic counts are shown on Table III.2b. On the Westerly City limit line, U.S. 27 is carrying 18,800 average daily trips (ADT) and on the Easterly City limits line, 18,400 ADT. The traffic volumes on U.S. 27 peak in the center of Clewiston at 25,500 ADT.

Table III.2a 2005 Annual Average Daily Traffic Report For Selected Sites in Hendry County								
Site	Site Type	Description	Direction 1		Direction 2		AADT Two-Way - LOS	
0004	P	SR 25/80/US 27, West of RR, West of Clewiston	9,300	W	9,500	E	18,800	B
0015	P	SR 25/80/US 27, West of Nursery Rd Clewiston	9,500	W	8,300	E	18,400	B
5008	P	SR 25/80/US 27, West of Deane Duff Av, Clewiston	13,000	W	12,500	E	25,500	B
Source: Florida Department of Transportation, 2004								
Notes: Site Type: P = Portable AADT Flags: C = Computed								

Table III.2b Historic Trends in Traffic Counts on Selected Roadways 2000 – 2005 City of Clewiston, Florida			
Site	2000	2005	% Change
0004	15,200	18,800	23.7%
0015	17,700	18,400	4.0%
5008	20,500	25,500	24.4%

Source: 2005 FDOT Traffic Data CD

Traffic Accidents

Traffic accident trends from 2001 to 2005 are shown on Table III.3. There were 263 reported accidents in the Clewiston city limits in 2001-2005 involving 3,109 drivers and passengers, in 525 vehicles. This is an average of 263 accidents per year.

As shown on Table III.4, the greatest causes of accidents (75%) were due to failure to yield right-of-way, careless driving, and improper backing.

Table III.5, which reflects information contained in City of Clewiston accident records shows that nearly 22% of those causing accidents are less than 24 years of age. Only 28% of those involved in accidents were Clewiston residents. This information is presented in Table III.6.

The most hazardous intersections between 2000 and 2005 are shown on Table III.7. U.S. 27 and Olympia had the most number of accidents, fifty (50) in six (6) years.

Table III.3
Trend in Traffic Accidents, 2001-2005
City of Clewiston, Florida

Average Data Item	2001	2002	2003	2004	2005	TOTAL	Per Year
Total Accidents	261	270	285	319	181	1,316	263
On Roadways	162	184	206	209	119	900	180
In Parking Lots	93	55	44	59	33	284	57
Pedestrian	6	2	5	3	1	17	4
Hit & Run	20	29	30	48	28	155	31
Vehicles Involved	553	528	548	640	356	2,625	525
Property Damage	\$490,840	\$561,805	\$606,730	\$730,725	\$636,633	\$3,026,733	\$605,347
Injuries	37	29	29	35	22	152	31
Fatalities	0	0	1	2	1	4	1
Persons Involved	624	662	648	764	411	3,109	622

Source: City of Clewiston Police Records

Table III.4
Contributing Causes of Accidents
2001 - 2005 City of Clewiston, Florida

Contributing Cause	Percentage Of Total
Failed to Yield Right-of-Way	23%
Careless Driving	33%
Improper Backing	19%
DUI	2%
Improper Turn	3%
Following too Close	5%
Exceeded Safe Speed Limit	0%
Improper Lane Change	3%
Failure to Maintain Equipment	0%
Failed to Stop at Stop Sign	2%
Improper Parking	0%
Improper Passing	1%
Failed to Stop for Red Light	2%
Failed to Cross at Cross Walk	0%
Obstructing Traffic	0%
Driving on Wrong Side or Wrong Way	0%
Mechanical Failure	0%
Disregard other Traffic Control Device	0%
Failed to Stop for Railroad Crossing Arm	0%
Driver Distraction	0%
Medical Condition	0%
Animal in Roadway	0%
Drove Left of Center	0%
Improper Load	1%
No Improper Driving Action	2%
Unknown	2%

Source: City of Clewiston Police Records

Table III.5
Age and Sex of Persons Causing Accident, 2001 – 2005
City of Clewiston, Florida

Age	% Male	% Female	% Both	
15-24	57	43	22	
25-34	53	47	16	
35-44	51	49	15	

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Table III.5 Age and Sex of Persons Causing Accident, 2001 – 2005 City of Clewiston, Florida				
Age	% Male	% Female	% Both	
45-54	67	33	12	
55-64	66	34	9	
65-74	70	30	6	
75-up	85	15	5	
Unknown	-	-	16	

Source: City of Clewiston Police Records

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Table III.6 Residence of Drivers Involved in Accidents 2001 - 2005 City of Clewiston, Florida	
Within Clewiston City Limits	28%
Hendry County, Out of City	33%
Florida Resident, Out of County	20%
Out of State	4%
Out of Country	0%
Unknown	15%

Source: City of Clewiston Police Records

Table III.7 Most Hazardous Intersections 2001 - 2005 City of Clewiston, Florida	
Location	Accidents
U.S. 27 & Berner	75
U.S. 27 & Olympia	50
U.S. 27 & W.C. Owen	34
U.S. 27 & San Pedro	32
U.S. 27 & Francisco	31
U.S. 27 & Deane Duff	28

Source: City of Clewiston Police Records

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Railroad and Bus Line

The only railroad operating within the City of Clewiston is the CSX which runs from Clewiston to Sebring. C & S Florida RR owns and maintains approximately 50 acres of land in the City of Clewiston and has 3.86 miles of track laid within the corporate limits. The City is also served by the Greyhound.

Cross-State Waterway

Lake Okeechobee is part of the waterway from Stuart on the East Coast to Fort Myers on the west. Clewiston provides marina base for boating, which is mostly leisure oriented, and has a moderate tourist attraction due to its location and facilities.

Traffic Circulation Analysis - Existing Roadway Analysis

The Florida Department of Transportation generalized level of service (LOS) criteria was used in the capacity analysis with modifications. The State minimum acceptable operating Level of Service standards for the State Highway System are shown on Table III.8. An explanation of the LOS is shown on Table III.9.

Table III.8 Statewide Minimum Acceptable Operating Level of Service Standards for the State Highway System				
Roadway Type	Existing Urbanized Areas	Other Existing Cities	Transitioning Urbanized or Incorporated Areas	Rural Areas
Freeways	D	C	C	C
Principal Arterials	D	C	C	C
Minor Arterials & Others	E	D	D	D
	Transportation Areas	Exclusive Facility	Constrained Facility	Backlogged Facility
Freeways	D	D	Maintain	Maintain and Improve
Principal Arterials	E	E	Maintain	Maintain and Improve
Minor Arterials & Others	E	E	Maintain	Maintain and Improve

Source: Florida Department of Transportation

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<p align="center">TABLE III.9 Level of Service Definitions</p>	
Level - of - Service A	Describe primarily free flow-operations at average travel speeds usually about 90 percent of the free flow speed for the arterial class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
Level - of - Service B	Represents reasonably unimpeded operations at average travel speeds usually about 70 percent of the free flow speed for the arterial class. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.
Level - of - Service C	Represents stable operations. However, ability to maneuver and change lanes in mid-block locations may be more restricted than in Level B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of the average free flow speed for the arterial class. Motorists will experience an appreciable tension while driving.
Level - of - Service D	Borders on a range on which small increases in flow may cause substantial increases in approach delay, and hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free flow speed.
Level - of - Service E	Characterized by significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
Level - of - Service F	Characterizes arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

Source: *Highway Capacity Manual*, Special Report 209, Transportation Research Board, 1985.

Current and Projected Level of Service on State/County Roadways

Figure III-1 shows the existing traffic levels and levels of service on U.S. 27. Figure III-2 shows the future circulation system through the year 2015. Figure III-3 shows projected daily vehicular trips and levels of service for state and county roads for the years 2010 and 2015 (where available). These traffic projections indicate that there will be no reduction in the level of service as a result of anticipated development or other conditions through the year 2015.

Projected traffic volumes prepared by David Plummer and Associates, Inc. for the year 2015 are contained in the Transportation Supplement for the Clewiston Gateway Amendment and have been rounded to the nearest hundred.

For Clewiston, the maximum operating LOS for U.S. 27 is LOS C in accordance with FDOT standards. U.S. 27, as a two-way arterial, 4-lane divided roadway, currently operates at a LOS C. Using the same FDOT standards for an analysis of roads within the County system (C.R. 835) it can be determined that these roadways currently operate well within the best attainable LOS under the State standards -LOS C.

Current and Projected Level of Service on Local Collectors and Local Streets

No data is available as to current volumes of traffic on an average daily or peak hour basis for streets not included in either State or County systems. There are no known congestion problems and it is believed these roadways operate at LOS C or better. The data contained in the aforementioned Transportation Supplement indicates that there are no development activities or other conditions expected which will reduce this perceived level of service. Due to the absence of data these streets are not included in Figure III-3.

Existing Traffic Needs

Data representing Existing Traffic Circulation Conditions are included in Figure III-1. Projected ADT and LOS are included in Figure III-3. At the present time, there are no critical issues with respect to traffic circulation. However several issues need to be addressed in the comprehensive plan to prevent future traffic circulation problems.

1. Annual monitoring of traffic volumes on U.S. 27 is recommended in order to assess and continually project the need for future traffic improvements on U.S. 27 to accommodate both local and through traffic.
2. As growth continues, consideration should be given to minimizing impacts on residential areas with traffic improvements.
3. As additional development occurs in the extreme western portion of the city, an additional collector north-south roadway corridor should be established.

4. The City should consider the feasibility of incorporating pedestrian and bicycle planning in future roadway improvement plans.
5. At the time a decision is made regarding the future of the airport, coordination of land use, community development and traffic engineering should be implemented to protect environmental and compatibility of land use, traffic circulation, and air safety.
6. Management of access to arterial and collector roadways is essential to ensure public safety and maximum utilization of investments made in roadways. Design standards regarding location, width and other design features must be added to the City's current regulations to facilitate proper access management.

Figure III-2
FUTURE TRAFFIC CIRCULATION CONDITIONS
CITY OF CLEWISTON, FLORIDA
2015

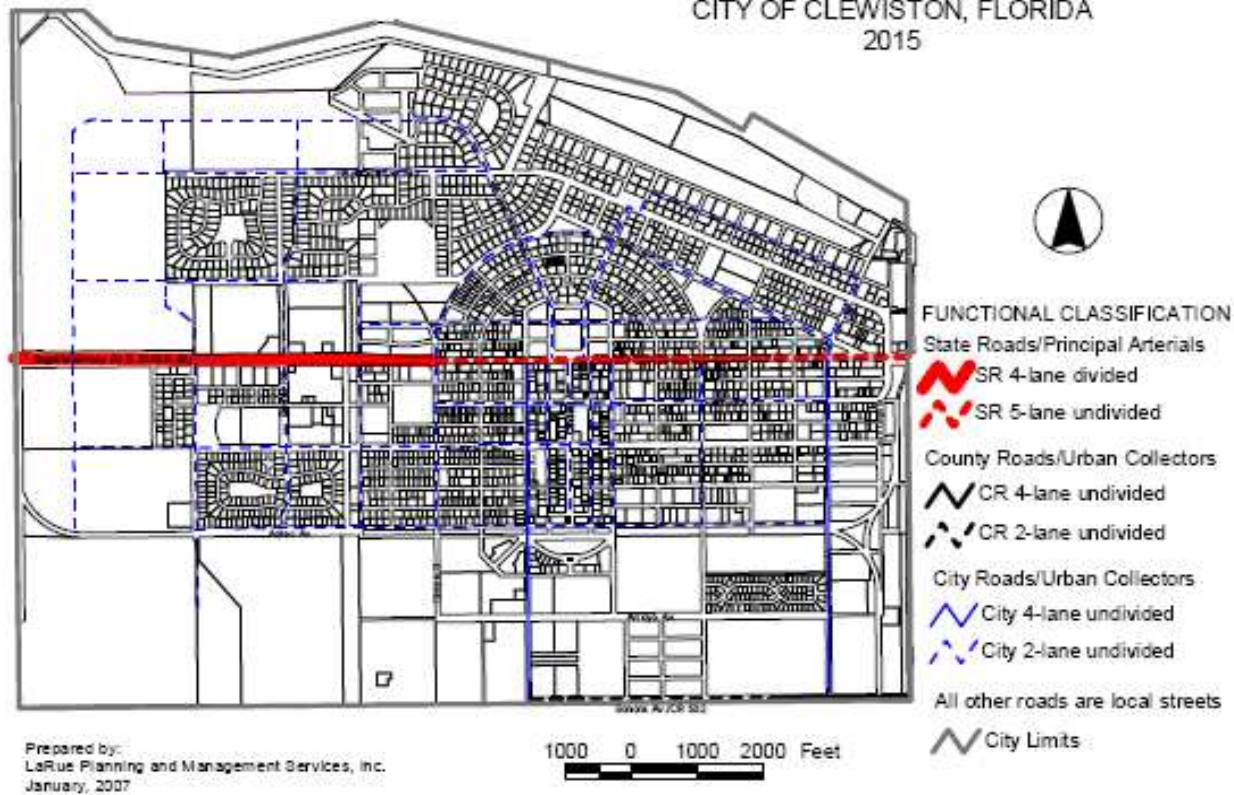
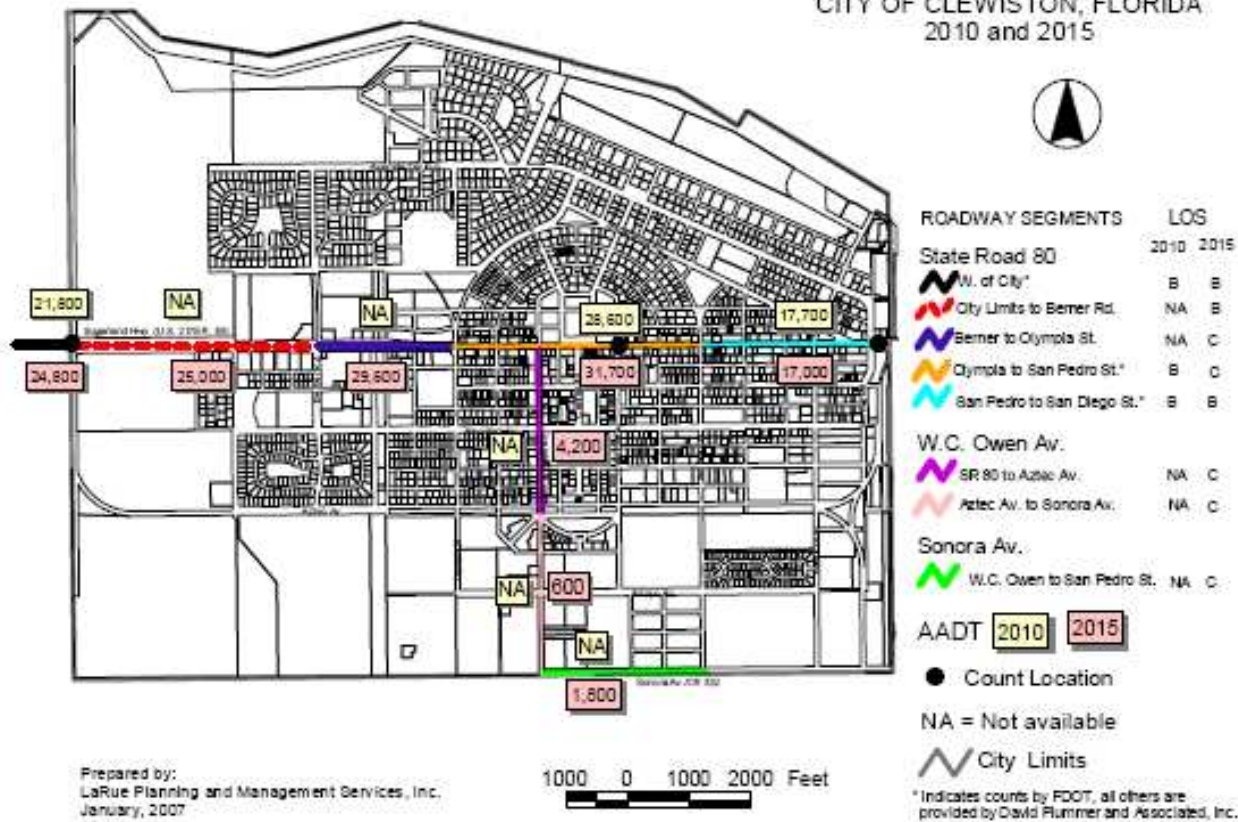


Figure III-3
PROJECTED DAILY TRIPS
CITY OF CLEWISTON, FLORIDA
2010 and 2015



Programmed Improvements

According to Hendry County's proposed Year 2030 Needs Plan, US 27 from SR 80 to CR 835 needs to be widened from the existing four-lane divided (4LD) facility to 6LD by 2030. The estimated cost for this facility is \$47,775,690 based on \$4,347,197 per mile for the 10.99 miles of this roadway link. The cost per mile is obtained from the FDOT's 2002 Transportation Costs Estimates Workbook and inflated to Year 2005. A multiplication factor of 1.5 is used to include the legal, maintenance and right of way costs.

Protecting and Preserving Rights-of-Way

Protection of roadways rights-of-way for roadway improvements along existing roadways or future construction of new roadways is vitally important to ensure timely implementation of the Comprehensive Plan. Setback requirements and maintenance of preliminary centerline alignment drawings of future roadways will facilitate proper dedications through platting and development permitting. Coordination with Hendry County and FDOT is necessary to ensure alignments which achieve the objectives of the City, County and State.

Traffic Circulation Goals, Objectives and Policies

- Goal 1:** To develop a traffic circulation system which safely and efficiently meets existing and future transportation needs, promotes accepted design standards and achieves desired levels of service.
- Objective 1.1:** The City will cooperate with the State of Florida, Hendry County and adjacent communities to achieve coordinated planning of land uses, transportation programs and traffic circulation so as to achieve and maintain service level standards adopted by each local unit of government and to protect the necessary rights-of way through development permitting.
- Policy 1.1.1:** The City will assist the County in undertaking transportation improvements and services which are consistent with this Comprehensive Plan, the Regional Policy Plan and FDOT's Transportation Plan.
- Policy 1.1.2:** Reserved.
- Policy 1.1.3:** The City shall continue to enforce provisions in its land development regulations to establish roadway requirements, including appropriate development setbacks and right-of-way dedications, addressing the need to acquire and preserve existing and future rights-of-way.
- Policy 1.1.4:** The City shall require dedication of on-site rights-of-way required to comply with the *Future Traffic Circulation Map* prior to issuance of a development order.
- Objective 1.2:** The City of Clewiston shall adopt in this Comprehensive Plan, minimum Level of Service standards for all roads to ensure safe, convenient and efficient traffic circulation in accordance with the guidelines of the Florida Department of Transportation.
- Policy 1.2.1:** The following minimum level of service standards are adopted for peak hour traffic flow on roadways within the City as depicted on the *Future Traffic Circulation Map*:
- | | | |
|----|--|-------|
| a: | Principal Arterial | LOS C |
| b: | County System Minor Arterials
(non-existing) | LOS C |
| c: | County System Urban Collectors | LOS C |
| d: | Local Collectors and Streets | LOS C |

- Policy 1.2.2:** The City shall not permit development which will result in traffic impacts which will cause the established level of service to be exceeded and means of achieving this objective shall be set forth in the City's development regulations adopted and implemented consistent with the requirement S163.3202 (1), F.S.
- Policy 1.2.3:** The City shall maintain level of service standards for all roads in accordance with provisions of this Comprehensive Plan.
- Objective 1.3:** The City, as part of its major thoroughfare access management program, will review building plans for the provision of safe convenient, and efficient major thoroughfare access, safe on-site traffic flow, sight visibility standards and site improvements for motorized and non-motorized vehicle movement and parking as well as pedestrian walkways.
- Policy 1.3.1:** The City will review and update its regulations regarding driveway design standards, location and spacing of driveway/ street intersections, sight distance requirements and other relevant regulations and, by setting forth standards in general conformance with FDOT standards, ensure that access design enables safe and efficient traffic flow, properly designed on-site traffic flow and parking, access for fire and emergency vehicles and related characteristics are established the City's site development requirements within the City's land development regulations.
- Policy 1.3.2:** The City, in development requirements and regulations as described in Policy 1.3.1, shall review plats, site plans and other permit applications to ensure that land development activities do not prevent implementation of the Traffic Circulation system.
- Objective 1.4:** The City shall coordinate development with the provision of adequate motorized and non-motorized transportation facilities.
- Policy 1.4.1:** The City shall monitor land use development trends and traffic levels of service to ensure that needed transportation facilities are provided by developers or appropriate government agencies prior to or concurrent with development.
- Policy 1.4.2:** The City will explore non-local funding sources for bicycle-related road improvements and maintenance programs proposed for local streets and other selected locations.
- Policy 1.4.3:** As new development is permitted, the City of Clewiston shall reserve and protect needed right-of-way and/or easements for bicycles and pedestrian facilities.

- Policy 1.4.4:** The City shall enforce provisions in its Land Development Regulations which require sidewalks in new commercial and residential developments that are subject to plat or site plan approval to be linked where possible to the existing sidewalk system.
- Policy 1.4.5:** Areas of the City not currently served by bicycle or pedestrian facilities shall receive top priority when such facilities are built in the future.
- Objective 1.5:** The City of Clewiston shall support and encourage FDOT in the implementation of projects listed in the FDOT 5-Year Work Program which are under the City's jurisdiction and are consistent with and further the Comprehensive Plan.
- Policy 1.5.1:** The City will promptly report to FDOT any observed deficiencies and needed improvements on state roads so that these may be added to the current work program or included in upcoming work programs covering the 2005-2020 planning period.
- Policy 1.5.2:** The City will observe traffic conditions on local streets on an ongoing basis to determine needs for traffic controls and other means of assuring an acceptable level of service and generally safe conditions for motorists and pedestrians.
- Policy 1.5.3:** The City shall assure that traffic improvements in residential areas do not conflict with the environmental and aesthetic conditions of such areas.
- Objective 1.6:** The City shall provide protection of existing and future right-of-ways from building encroachment.
- Policy 1.6.1:** The City shall require plan drawings for building permit applications to delineate the ultimate right-of-way line of abutting roads in accordance with the City's future Traffic Circulation Map and right-of-way standards of the City, County and State Department of Transportation as applicable. Street/right of ways will not be less than 60' with swales or 50' with curb and gutter except where Avenida del Rio, Caribbean Avenue, Alverde Avenue and Arroyo Avenue are adjacent to drainage canals, their widths shall not be less than 40 feet. A permit for building approval will only be issued if the proposed improvements satisfy the City's standards for the ultimate right-of-way line.
- Policy 1.6.2:** The City shall require all new developments to meet setback distances for ultimate right-of-way requirements for arterial and collector roadways so as to achieve the planned traffic circulation plan, Goals, Objectives and Policies as set forth in this element.